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REPORT
TO THE
NATIONAL SECURITY COUNCIL

US POLICY ON TOXINS

21 January 1970
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Submitted by the
Interdepartmental Political-Military Group
in response to NSSM 85

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US POLICY ON TOXINS

Introduction

In response to NSSM 85, this report by the Interdepartmental Political-Military Group (IPMG) examines US policies, programs, operational concepts and alternatives thereto with respect to toxins.

Part I contains background information fundamental to consideration of the policy issue.

Part II addresses the policy issue and options together with the relevant PROS and CONS.

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PART I: BACKGROUND

Toxins are chemical substances. Unlike biological agents, they are not living organisms and are not capable of reproducing themselves. The effects of toxins, such as botulism (food poisoning) and tetanus, are generally thought of as illnesses or diseases.* Toxins do not cause infectious disease and are not transmissible from man to man. Hence, unlike biological agents, toxins cannot cause epidemics or establish long-term sources of illness.

At this time, the only method of producing the toxins currently thought to have potential military utility is from bacteria or other biological organisms, although we could probably develop a way of synthesizing some toxins chemically. Regardless of the method of production, toxins have some of the characteristics of biological agents and it is here that ambiguity enters. There is a period of time ranging from minutes to hours before the effects of toxins are produced, a delay intermediate between that of chemicals and the incubation period of biological agents. Moreover, as the effective dosage is extremely small, the area that they can practically cover is considerably larger than possible with chemical agents, though not as extensive as for biological agents.

Military toxins are currently defined in U.S., Quadripartite[#], and NATO military documents as chemical agents and the Secretary of Defense has so classified them

* The pathological effects of some diseases are caused in part by toxins which are produced by bacteria within the human body.

[#] U.S., U.K., Canada, Australia.

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publicly. Until NSDM 35 was issued there was less need to differentiate clearly between biologicals and chemicals.*

Soviet civil and military defense publications classify toxins as biological agents, while acknowledging that by their action and methods of employment toxins are more closely related to chemical weapons. France includes toxins in their defensive manuals with biologicals, but has agreed with the NATO position as noted above.

The recent UN Secretary General's report (July 1, 1969) and the World Health Organization (WHO) (November 21, 1969) both treated toxins as chemical substances. Of interest, the WHO report did add a caveat that "in some discussions of chemical and biological weapons, such toxins are classified as biological agents because the technology of their production resembles that of biological agents."

Toxoids, the immunizing materials that protect humans from toxins like tetanus, can be made only by growing bacteria and extracting the toxin to be used as the starting material for the production of toxoids. Hence, toxins have to be produced for public health and defensive purposes.

* Toxins have frequently been included in the biological sections of U.S. and allied military documents. The Dictionary of U.S. Military Terms for Joint Usage, dated 1 August 1968 indicates that France, Belgium, SEATO and CENTO use the following definition of biological warfare: "Employment of living organisms, toxic biological products and chemical plant growth regulators to produce death or casualties in man, animals or plants; or defense against such action." (Emphasis added) NATO and the JCS limit the definition of biological agents to: "A micro-organism which causes disease in man, plants, or animals or causes the deterioration of materiel." Toxins were also included in the definition of biological weapons in the 1954 Protocol establishing arms control provisions for the Western European Union.

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This facet of toxin production is not at issue in this paper or in the UK draft Convention. However, the requirement for such production must be considered in the verification provisions of any relevant arms control agreement.*

Production Process for Toxins

Toxins are produced by bacteria as well as by many other biological organisms or forms of life--for example, mollusca, corals, and fish. Bacterial toxins are produced by growing the specific bacteria in a nutrient broth, removing the bacteria by filtration or centrifugation, and concentrating the toxin by chemical processes such as precipitation and absorption. Toxins of plant origin (e.g., ricin from castor beans and amanita toxin from mushrooms) are produced by macerating the plant and chemically extracting the toxin in suitable solvents. Toxins of animal origin are also extracted chemically.

There appears to be no technical reason why some toxins could not be made synthetically in a chemical plant, although none of current military interest have as yet been so produced. There may be an analogy to penicillin and other antibiotics which originally were manufactured by growing micro-organisms and then extracting the antibiotics, but now are also made synthetically.

Current U. S. Capabilities

Three toxins (see chart on following page) are currently considered to have potential military use. A number of others are being investigated as discussed in the next section.

* The JCS believe that the amounts of biologically-produced toxins likely to be required for defensive/medical purposes are probably larger than the amounts that would be required for offensive military use.

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<u>TOXIN</u>	<u>EFFECTS</u>	<u>RAPDITY OF ACTION</u>	<u>DURATION OF EFFECTS</u>	<u>NATURE OF PRODUCTION</u>	<u>EXISTING PRODUCTION CAPABILITY</u>
Botulinum	Approaching 100% fatalities	12 hrs.	36-72 hours for survivors	Purified from bacterial culture	280 lbs/mo
Shellfish Poison	Approaching 100% fatalities	5-10 min.	36-72 hours for survivors	Chemical extraction from biological source	Negligible
Staphylococcal Enterotoxin	Incapacitating	1-6 hours	12-36 hours	Purified from bacterial culture	600 lbs/mo

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There are fewer than 15 pounds of bulk lethal toxins and 100 pounds of incapacitating toxins in stockpile. These constitute stocks for research and development and would provide only a token military capability. The U.S. is not now producing toxins for stockpiling, only for research and test purposes.

The so-called "poison bullets" are obsolete, have deteriorated, and are scheduled for destruction with no replacement planned.

The major delivery system now available for toxin dispersal is the A/B 45Y-4 airborne disseminator, which can disseminate 230 pounds of agent. The system was tested on F-4 aircraft near Einwetok Atoll in September and October 1968 with the incapacitant staphylococcal enterotoxin. These tests indicated that the weapon would cause a 30% casualty rate over 2400 square kilometers, assuming unmasked target populations. There have been no field tests with lethal botulinum or lethal shellfish toxin in the A/B 45Y-4.

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Research and Development

The bacterial toxins botulinum and staphylococcal enterotoxin have been the most thoroughly investigated. The lethal dose for man of botulinum toxin is estimated to be 4,800 nanograms*. The dose of the incapacitating staphylococcal enterotoxin has been accurately determined to be 26 nanograms, making it one of the most potent physiologically active materials known.

Non-bacterial toxins have been studied and an extremely toxic lethal material has been isolated from several species of coral of the genus Palythoa. The lethal dose for man of this material is estimated to be of the order of 100 nanograms.

Prospects for success in the synthesis of some toxins are good, but the synthesis of others will be difficult. Botulinum is a protein with a high molecular weight and its synthesis would offer difficulties that appear to be insurmountable with present technology. Staphylococcal enterotoxin is also a protein, but with a lower molecular weight. Its synthesis might be technically possible but attaining an economical production capability is by no means assured.

Protective toxoids to immunize against botulinum have been developed and tested by the Army and are very effective. Toxoids to protect against incapacitating staphylococcal enterotoxin are much less effective.

*One nanogram = one billionth of a gram or 1×10^{-9} grams.

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The non-bacterial toxins are quite different. The toxin from Palythoa, for example, is a small molecule with a weight of about 350 and very likely could be synthesized and probably produced by synthetic process. The toxin from puffer fish is similar. Toxoids for protection against such toxins are not expected to exist.

Current military R&D on toxins is devoted to efforts to synthesize toxins of low molecular weight, especially the lethal toxin from Palythoa, to developing the most effective of several types of incapacitating staphylococcal enterotoxins, and in a search for methods of detecting and warning against attacks by toxins. There is no military R&D on botulinum toxin at this time.

Toxins have general scientific interest and a significant amount of research is conducted throughout the world. This work is primarily on the mechanism of toxic action and on synthesis of toxins.

Foreign Capabilities

Soviet scientists have carried on investigations pertaining to a variety of plant, animal and microbial toxins in the course of work that appears to be medically oriented. The number of published studies indicates no special interest or emphasis. The only toxin known to have received consideration in Soviet BW defense-related research is botulinum toxin. The Soviets list this toxin along with three bacterial diseases (anthrax, plague, cholera) as the BW agents to be tested for first in their BW detection and identification procedures.

With respect to a Soviet capability to produce toxins, we believe that they can probably produce at least two of the six types of botulinum toxin by biological processes. We are virtually certain that they have not

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been able to produce any of the types of chemical processes. They have conducted a sizeable military R&D program in aerogenic immunization, using these two types, as well as studies on decontamination and identification procedures, means of purifying and stabilizing the toxin, and methods of handling military and civilian casualties arising from its use. The Soviet explanation for their interest in aerogenic immunization is that in the event of biological warfare "the most likely attack will be by the aerosol route." The extensive work on aerosolized botulinum toxin provides them with a quite adequate basis for an offensive capability. We have no evidence of production or stockpiling of this toxin for this purpose.

There is no evidence of military interest in toxins for offensive purposes on the part of any other country.

Military Utility

In circumstances in which troops are not masked nor immunized, the effective dosages of toxins can be delivered over large areas with far less logistic effort as compared to nerve agents. Decontamination of affected areas is relatively uncomplicated.

Because of the lower dosages required, greater tactical flexibility would result from the use of toxins as compared to other chemical agents. Smaller quantities are sufficient to achieve equivalent area coverage and targets can be attacked from greater upwind distances. Masks provide less certainty of protection against toxins than against other non-persistent chemical agents, for example GB, because minor leaks are more critical; however, they still afford very substantial protection. Also, no country is now known to have an effective detection and alarm system for toxins. The development of such systems poses more technical difficulties than for nerve agents.

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If it can be assumed that the enemy has not been immunized and/or is not wearing masks, these toxins could offer logistic advantages over other chemicals. Fewer tons of toxins would need to be moved to attack an equivalent area. Under these circumstances this reduced logistics requirement could expedite retaliation in any area of the world where the U.S. does not maintain overseas chemical stockage.

Toxins are not generally adaptable to present explosive munitions but development tests of non-explosive munitions indicate that toxins may have an approximately eight-fold advantage in effectiveness over present chemical artillery munitions against unprotected personnel.

On the other hand, some toxins take longer to act than chemical agents VX and GB and are therefore less useful where rapid reactions are required. Also, enemy defense would be easier in the event of retaliation with toxins because toxins do not penetrate through the skin and therefore do not require the cumbersome defensive equipment (e.g., protective clothing) and decontamination measures needed against persistent agents. Because existing toxins are not persistent, these cannot be used to create barriers or deny terrain. For certain toxins (e.g., botulinum) there are effective immunization techniques available and this must be considered in connection with employment. Finally, in response to an enemy attack with nerve agents or mustard, retaliation with toxins might be perceived as the introduction of "biological warfare" because of the similarity of their effects to disease.

The military uses, advantages and disadvantages of toxins apply equally to possible use by enemy forces against U.S. forces.

Toxins, as all chemical agents currently stockpiled except mustards, have never been employed operationally. As a result, the advantages and disadvantages discussed

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above are largely derived from studies, war gaming, and chamber and test data. Until the recent renunciation of biologicals, toxins have been somewhat overshadowed by biologicals both in the research and development field and in production efforts largely because biologicals have been considered to have greater cost effectiveness and because stockpiles of incapacitating biologicals have been maintained for a number of years.

The incapacitant staphylococcal enterotoxin represents the only incapacitating capability likely to be available for at least the next three to five years. No synthetic chemical incapacitant appears to have equally promising characteristics and no other incapacitant in R&D has been operationally tested to date.

In the area of lethal toxins, it is clear that none of the present lethal toxins could serve in lieu of our existing persistent chemical capability, largely because of their lack of persistency and inability to penetrate the skin. However, a number of lethal toxins in R&D appear to have such low effective dosages that they might serve a complementary role to non-persistent lethal chemicals, largely through their ability to increase the criticality of normally acceptable leakage in protective masks and to increase difficulty in enemy detection and warning systems.

Toxins having military interest have yet to be synthesized. Thus, if a near term capability in toxins is to be developed, the U.S. would have to rely on a biological production process.

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Toxins and the UK Draft Convention, the Geneva Protocol
of 1925, and Hague Convention No. IV of 1907

UK Draft Convention

The United States has associated itself with the principles and objectives of the UK draft Convention on the Prohibition of Biological Means of Warfare. The toxin issue is certain to be raised at the resumed session of the Conference of the Committee on Disarmament (CCD) in February. The UK draft Convention does not prohibit the use of toxins, but the UK has stated that it would be willing to consider redrafting the Convention to include toxins. The UK draft Convention is itself ambiguous as to whether it would preclude the use of biological materials as intermediates in the production of toxins. The UK draft Convention would preclude the production, acquisition, or research aimed at production of "microbial or other biological agents of types and in quantities that have no independent justification for prophylactic or other peaceful purposes." While some UK spokesmen have publicly stated that production and possession of bacteria for the development of toxins for hostile purposes would be prohibited by this language, the language in the UK document could be interpreted to apply only to end products which are biological agents.

If we wished to make sure that we had preserved the option to produce military toxins by biological means, we would have to make certain that the UK draft Convention did not prohibit their production. However, this would put our position at odds with the publicly stated UK interpretation* of their draft and add to the task of

*The DOD notes that the UK has taken no official governmental position on these matters, and further notes that the views expressed are those of mid-level UK spokesmen, the highest of which being the Head of the Disarmament Section, British Foreign Office.

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winning support for the principles and objectives of the Convention. Moreover, if the draft Convention were construed to permit biological production facilities and if other countries took advantage of this, verification under the UK draft Convention could be rendered even more difficult.

On the other hand, if the U.S. accepted the UK interpretation that their draft Convention prohibited the production of toxins by biological processes (all toxins of current military interest are produced biologically today), the association of this technically chemical agent with the Convention could encourage pressure toward the prohibition of all chemical agents without more verification than provided by the UK draft Convention.

The UK has expressed a desire to review the U.S. and UK positions before the next meeting of the CCD.

Geneva Protocol

The Geneva Protocol prohibits any use in war of lethal or incapacitating chemical or biological agents. Most of the major powers have converted this into a "no-first use" undertaking by means of a reservation to the effect that the Protocol shall cease to be binding with regard to any State if such State or any of its allies fails to respect the prohibitions laid down in the Protocol.

The negotiating history of the Geneva Protocol is not conclusive as to whether toxins were deemed to come either within the category of "asphyxiating, poisonous or other gases, and analogous liquids, materials or devices" or within "bacteriological methods of warfare." However, two toxins--those causing botulism and tetanus--were specifically mentioned in the discussion of bacteriological methods of warfare. Thus, from the standpoint of the negotiating history (although not from a scientific viewpoint), other parties could claim that toxins must be treated as bacteriological methods of warfare in interpreting the Protocol. No government has stated its position on this question under the Protocol.

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The most immediate problem would arise if we wished to ratify the Protocol with a reservation that would codify announced U.S. policy--i.e., reserve the right to retaliate with chemical weapons but not biological weapons. In this event we would have to make clear to the Senate and to the other parties that our reservation included toxins. This could create difficulties in the Senate ratification proceedings, as well as highlighting the toxin issue internationally. This problem would not arise if the U.S. took the standard reservation taken by the major powers that the Protocol would cease to be binding if violated by others.

Hague Convention No. IV of 1907

Article 23 of the Regulations annexed to Hague Convention No. IV respecting the Laws and Customs of War on Land--by which the United States is legally bound--provides that "It is especially forbidden... to employ poison or poisoned weapons." Legal authorities are divided on whether the prohibition covers use of toxins. No government has taken a public position on this question.

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PART II: POLICY ISSUE AND PROGRAM OPTIONS

There is one basic issue:

Should the U.S. maintain an option to develop capabilities to retaliate with toxins against chemical or biological attack?

(Implicit in this issue is an understanding that defensive research and development programs will be authorized whether the option to develop capabilities in toxins is retained or not. Defensive research and development programs are implied in the first two options and, as noted, constitute the third option. In general, an offensive research and development program differs from a defensive research program in that the former includes R&D on weapons-delivery systems and large-scale production techniques and the latter does not.)

Since toxins may be produced either by biological processes or eventually by chemical synthesis, there are three program options.

OPTION I: Reserve the Option to Develop, Stockpile and Use in Retaliation Toxins Produced by Either Biological Processes or Chemical Synthesis. (Implicit in the acceptance of this option is an offensive, as well as defensive, research and development program for toxins produced by either method and for related delivery systems/weapons.)

OPTION II: Renounce the Option to Develop, Stockpile and Use in Retaliation Toxins Which are Produced by Biological Processes. Reserve the Option to Develop, Stockpile and Use in Retaliation Only Those Toxins Produced by Chemical Synthesis. (Implicit in the acceptance of this option are: (1) a defensive research and

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development program only for biologically-produced toxins; and (2) offensive, as well as defensive, research and development programs for the development of chemically-synthesized toxins are related delivery systems/weapons.)

OPTION III: Renounce the Use, and Hence the Development and the Stockpiling, of Weapons Systems Using Toxins Produced Either by Chemical Synthesis or Biological Processes. (Implicit in the acceptance of this option are only defensive research and development programs for all toxins with the purposes of assuring adequate defensive measures and of protecting against technological surprise.)

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OPTION I

Reserve the Option to Develop, Stockpile and Use in Retaliation Toxins Produced by Either Biological Processes or Chemical Synthesis. (Implicit in the acceptance of this option is an offensive, as well as defensive, research and development program for toxins, produced by either method, and for related delivery systems/weapons.)

PROS:

1. As the U.S. has renounced biological weapons, toxins represent the only candidate agents to achieve significant logistic advantage or large area coverage in either a lethal or an incapacitating role. Toxins could provide anywhere from 10- to 1000-fold advantages in these respects (depending on the toxin*) over existing chemical weapons assuming that the enemy has not been immunized and/or is not wearing masks.
2. Staphylococcal enterotoxin (produced by biological processes) represents the most promising current potential to achieve an incapacitating capability.
3. This option retains maximum flexibility to develop a variety of toxins which may have military utility as part of a U.S. retaliatory capability. (Could provide either an incapacitating capability for U.S. forces within 1-3 years or another lethal option /botulinum/ besides currently stockpiled GB and VX nerve agents.)

* About 10-20 fold for botulinum (lethal) and about 1000-fold for staphylococcal enterotoxin (incapacitating) and certain lethal toxins still in research and development.

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4. Assuming that the enemy has not been immunized and/or is not wearing masks, logistic supply by air for retaliation from CONUS would be simpler than for other chemicals because of much lower container weight requirements and possible lower supply requirements.

5. This option may complicate the military planning and defense problems of other countries.

6. Even though the predicted military utility of toxins may never be realized, retention of the option (and announcement thereof) could provide a bargaining lever for future arms control discussions.

CONS:*

1. Biological programs for toxins could be used as a basis for charging the U.S. with preparation for biological warfare.

2. The use of toxins could be used as a justification for employing biological agents against U.S. forces. (The use of toxins could be perceived as or used as a basis for charging the U.S. with biological warfare in view of the fact that the victims--who would constitute a large percentage of all unprotected personnel within the affected area--would contract disease [botulism; tetanus, et cetera] even though not communicable ones. This would be true regardless of whether the toxins

* OST maintains that toxins would have marginal utility as retaliatory weapons in battlefield situations assuming that an enemy force which had initiated the use of chemical or biological weapons in war would have taken protective measures, such as the provision of masks. Although mask leakage would be more critical with toxins than with some other chemical agents, masks alone provide no adequate protection against the skin-penetrating nerve agents.

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were produced by biological or chemical means.)*

3. Production of toxins by biological processes would cast doubt on the significance and credibility of the U.S. renunciation of biological warfare and tend to weaken its favorable domestic and international impact. (For example, maintenance of facilities for the production of toxins by biological means could be claimed to be inconsistent with announced U.S. policy that "the United States will confine its biological research to defensive measures such as immunization and safety measures" and that "our bacteriological programs in the future will be confined to research in biological defense, on techniques of immunization, and on measures of controlling and preventing the spread of disease.") Production in amounts needed for a significant military capability would require operation of our present production facility or new chemical facilities for synthetically-produced toxins.

4. The increased publicity that toxins would receive from the national and international attention incident to choosing this option could stimulate interest in the development of toxins and perhaps biologicals by other countries. Thus, it could encourage proliferation.**

5. Production, storage, transportation and open air testing could cause domestic political problems incident to complying with public law which requires advance notification to Congress and the Governors concerned with projected activities in these areas.

* OSD and JCS believe that the portions in parentheses are unnecessarily redundant in view of CON 2 and unduly exaggerate the importance of this point.

** OSD and JCS believe that in practice proliferation of a toxin capability is probably considerably less likely than proliferation of other chemical capabilities, as evidenced by the production difficulties, required dissemination techniques and equipment, and the requirement for a highly developed chemical and biological technology which the purification/production of toxins requires.

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6. This would place the U.S. in opposition to the U.K. interpretation of the UK Draft Convention by requiring the U.S. to take the position that bacteriological/biological processes could be used for the production of toxins.*

7. If we choose to ratify the Geneva Protocol with the type of reservation that codifies U.S. chemical warfare and biological research policies (i.e., that preserves the right to retaliate with chemicals but not biological warfare agents), preservation of this option would require us to establish that, regardless of the negotiating history of the Geneva Protocol, we did not consider the use of toxins to be a biological method of warfare. This could complicate the Senate ratification proceedings and, unless formally conveyed to other Parties, would be legally vulnerable to challenge.

Public Affairs Rationale.** Any public explanation of Option 1 could utilize the following points:

1. Toxins are indeed chemical substances and are so defined in the UN Secretary-General's report, the World Health Organization report and by the international technical community.

* OSD notes that the UK has taken no official governmental position on these matters, and further notes that the views expressed are those of mid-level UK spokesmen, the highest of which being the Head of the Disarmament Section, British Foreign Office.

** The lead into any public explanation would probably be much the same for all three options and could include: (1) a reiteration of the significant policy initiatives taken on November 25 (for example, the renunciation of all offensive preparations for and methods of biological warfare); and (2) a statement that after these new policies, the President directed that a further comprehensive study of U.S. policies and programs on toxins be conducted for consideration in the National Security Council system.

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2. Toxins differ from other chemicals in that the production of toxins happens to occur in biological organisms, but toxins are not transmissible from man-to-man and cannot themselves cause epidemics as is the case with biologicals.

3. The method of production is not germane to the basic policy question and, therefore, toxins should be treated entirely as part of the U.S. chemical warfare program.

4. The U.S. policy of "no first use" would, of course, apply to toxins as it does to all other chemical weapons.

5. The U.S. will continue to work towards effective arms control agreements in this area.

6. U.S. policy renouncing all biological weapons has been made clear and there should be no question of diverting any of the biological processes for toxins to preparations for biological weapons.

Major Drawback. Possible drawbacks to this explanation are delineated in the arguments against the option. In brief, the principal drawback from the public affairs standpoint could be the accusation that, despite the President's announcement of November 25 renouncing all offensive preparations for biological warfare, a U.S. biological warfare program would continue under the guise of a toxins program and that the U.S. had simply renounced one type of "disease weapon"* to embrace another.

* The term "disease" is a functional term only in the sense that it describes the introduction of a foreign poisonous substance into the body. "Disease" does not imply that the particular substance involved is transmissible from man-to-man.

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OPTION II

Renounce the Option to Develop, Stockpile and Use in Retaliation Toxins Which are Produced by Biological Processes. Reserve the Option to Develop, Stockpile and Use in Retaliation Only Those Toxins Produced by Chemical Synthesis. (Implicit in the acceptance of this option are: (1) a defensive research and development program only for biologically-produced toxins; and (2) offensive, as well as defensive, research and development programs for the development of chemically-synthesized toxins are related delivery system/weapons.)

PROS:

1. Would leave open the development of a toxin capability by chemical synthesis. Thus, the advantages cited for Option 1 of flexibility and relative logistics simplicity could accrue under this option if the U.S. developed effective toxins by chemical synthesis.
2. Would not require modification of the UK Draft Convention.
3. Would remove a basis for claiming that we were acting inconsistently with the President's announcements on our biological research program by renouncing the production of toxins by biological processes.
4. The production of the lethal toxins which may have the most potential military utility can probably be accomplished in militarily significant quantities by chemical synthesis only.

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CONS:*

1. Would tend to limit U.S. capabilities to lethal toxins as the only known incapacitating toxin (staphylococcal enterotoxin) is of bacterial origin and much less amenable to chemical synthesis than a number of lethal toxins.

2. Would deny toxins to the U.S. for a period of some years (at least 3-5 years) while methods of chemical production were being developed.

3. The U.S. basis for retention of chemically-produced toxins (i.e., method of manufacture) could be difficult to sustain.**

4. Could continue some of the contentions over the existence of possible loopholes in the U.S. renunciation of biological warfare by creating questions as to the significance of differences based solely on the method of manufacture of toxins.

5. Could stimulate foreign interest in toxins and thus risk possible proliferation,*** while the U.S. limited itself to chemically-synthesized toxins.

* OST maintains that toxins which might be synthesized would have somewhat improved but probably still marginal utility as retaliatory weapons in battle-field situations.

** OST believes that this position is no more difficult to sustain than the comparable question in Option III, Con 3.

*** OSD and JCS, for reasons noted, believe that in practice proliferation of toxins capabilities is probably less likely than proliferation of other chemical capabilities.

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6. Could perhaps complicate future arms control measures and verification procedures in the sense that, as it becomes possible to synthesize chemically those toxins that now require a biological process, a country could produce biological toxins while claiming that they had been chemically produced.

Public Affairs Rationale. Any public explanation of Option II could utilize the following points:

1. Even though toxins are chemicals, as defined by the UN Secretary-General's report, the World Health Organization's report and the international technical community generally, the U.S. will engage in no biological production processes for the production of toxin weapons.

2. As announced on November 25, U.S. biological research programs will be for defensive purposes only, such as developing techniques of immunization and preventing the spread of disease.

3. The U.S. will have no need to operate any secret facilities capable of producing biological or bacterial toxins and hence also capable of producing biological weapons in large quantities.*

* Such an announcement, however, might best await the Secretary of Defense's recommendations with regard to the implementation of NSDM 35 on chemical warfare programs and biological research programs. On the other hand, if either Option II or Option III were selected, one can state with confidence that there would be no need for the operation of production facilities in secret. The Departments of Defense, Agriculture and HEW, the Office of Science and Technology and the National Academy of Sciences are looking into possible uses for the present biological production facilities and the possible de-classification of some of the other biological laboratories.

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4. The President has directed that all stocks of toxins which are not necessary for strictly defined defensive purposes be destroyed.

5. These decisions are taken with full confidence that they are in keeping with the overall security of the U.S.

6. This action underlines U.S. support for the principles and objectives of the UK Draft Convention Prohibiting the Use of Biological Means of Warfare.

7. The U.S. will continue to work towards effective arms control agreements in these areas.

When asked about the policy on chemically synthesized toxins, the reply could utilize the following points:

1. Toxins are chemical substances and differ from other chemicals only in that toxins happen to occur also in nature.

2. Unlike biological agents, which the U.S. has clearly renounced, toxins do not replicate, are not transmissible from man-to-man and cannot themselves cause spreading epidemics.

3. The U.S. is not in the business of differentiating between various chemicals or blurring the primary technical line which can be drawn between chemicals and biologicals (that is, the latter replicate and the former do not).

Major Drawback. Possible drawbacks to this explanation are delineated in the arguments against the option. In brief, the principal public affairs drawback could be the accusation that the U.S. continues to devise loopholes for its policy in this area because, while biologically-produced toxins had been renounced, the option was left open to produce these very same "disease-producing" toxin weapons by chemical processes.

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OPTION III

Renounce the Use, and Hence the Development and Stockpiling, of Weapons Systems Using Toxins Produced Either by Chemical Synthesis or Biological Processes. (Implicit in the acceptance of this option are only defensive research and development programs for all toxins with the purposes of assuring adequate defensive measures and of protecting against technological surprise.)

PROS:

1. Would provide the necessary defensive measures for U.S. forces and protect against technological surprise.
2. Would tend to eliminate questions as to the significance and credibility of the U.S. renunciation of biological methods of warfare and U.S. policy on biological research.
3. Would put the U.S. in the best position to ratify the Geneva Protocol with the type of reservation that most closely corresponds with U.S. policy on chemical warfare and biological research.
4. Would enable the U.S. to accept the UK position on the UK Draft Convention without risk of creating the appearance of loopholes.
5. Would be favorably received in public discussion by appearing to extend the recent prohibition on biologicals to include toxins and would avoid any appearance of a loophole in U.S. policy with respect to biological research.
6. Would be less likely to stimulate foreign interest in toxins as weapons or to risk proliferation.

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CONS:

1. Would foreclose the development of toxin weapon systems which may have military utility.
2. Would put the U.S. at a disadvantage if other countries had toxin programs and we failed to persuade them to place similar restrictions on such programs.
3. The U.S. could be challenged as to why it was willing to unilaterally renounce one class of chemical agents but not all chemicals.
4. If the U.S. wished to insist on adequate verification of arms control agreements involving chemicals, this position could be difficult to sustain in light of the fact that the U.S. would have already unilaterally renounced one class of chemical agents.

Public Affairs Rationale. Any public explanation of Option III could utilize the following points:

1. In spite of the fact that toxins are today produced by biological processes, toxins are indeed chemical substances as defined by the UN Secretary-General's report, the World Health Organization's report and the international technical community generally.
2. The review of U.S. policy on toxins was a difficult one. Toxins are like other chemicals in that toxins do not replicate, are not transmissible from man-to-man, and cannot cause spreading epidemics. While some toxins cause what is thought of as "disease", others do not.
3. Nonetheless, after carefully considering all the facts and the possible consequences, the U.S. has decided to renounce any offensive preparations for and the use of all toxins as a method of warfare, even in retaliation.

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4. Toxins are associated with many diseases, and the U.S. renounces the use of any disease as a method of warfare.

5. U.S. toxins programs will be for defensive purposes only, such as developing better immunization techniques, safety measures, and preventing the spread of disease.

6. The U.S. will have no need to operate any secret facilities capable of producing biological toxins and hence also capable of producing biological weapons in large quantities. (Same for Option II)

7. The President has directed that all stocks of toxins which are not necessary for strictly defined defensive research purposes be destroyed. (Same for Option II)

8. These decisions are taken with full confidence that they are in keeping with the overall security of the U.S. Toxins do not add a significant or necessary contribution to the U.S. defense posture.

9. This underlines U.S. support for the principles and objectives of the UK Draft Convention Prohibiting the Use of Biological Means of Warfare and goes one step further.

10. The U.S. hopes that other nations will follow this example and join us in working towards effective arms control agreements in these areas. (Same for Option II)

Major Drawback. Possible drawbacks to this explanation are delineated in the arguments against the option. In brief, the principal drawback could be the challenge that, if the U.S. has decided to renounce one class of chemical agents, what reason does the U.S. find for not renouncing all of these types of weapons and destroying the other chemical weapons stockpiles.

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